

REMARKS

Claims 1-4, 9 and 10 are now pending in this application for which applicant seeks reconsideration.

Priority Acknowledgment

Although the examiner checked Box 12 in the Office Action Summary, boxes a) and 1) were not checked. Applicant request the examiner to check these boxes in the next Office Action to correctly acknowledge receipt of the certified copy of the priority application submitted on 23 March 2004.

Amendment

Non-elected claims 5-8 and 11-22 have been canceled without prejudice or disclaimer, and claims 1-3, 9, and 10 have been amended. Claims 2, 3, and 10 have been amended to improve their form, while independent claims 1 and 9 have been amended to further define the pulse adjusting device and the calculating device, respectively. Support for the amendment is found at least on page 37. No new matter has been introduced.

Art Rejection

Claims 1-4, 9, and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Wibbels (USP 6,731,887) in view of Sawayama (USP 5,729,353). In rejecting the claims, the examiner states that Wibbels explicitly teaches all of the claimed features, except for the pulse counting technique for measuring a distance. The examiner relied upon Sawayama for the proposition that using a pulse counting technique for measuring a distance would have been obvious. Applicant submits that the presently amended claims define over the applied references because the combination would not have disclosed or taught the pulse adjusting or calculating device as set forth in independent claims 1 and 9.

Independent claim 1 now calls for a pulse adjusting device that adjusts the second number of pulses of the image clock so as to be $1/(1 + X/100)$ of the first number of pulses of the image clock. Independent claim 9 now calls for a calculating device that calculates the number of pulses of the second image clock so as to be $1/(1 + X/100)$ of the number of pulses of the first image clock. X, which represents in percentage the expansion/contraction ratio of the transfer material after fixing the image on the first surface, is positive when the transfer material expands and negative when the transfer material contracts.

Wibbels discloses a method of registering a first and a second duplex image on an imaging device, which includes applying a first image to a first side of a media, modifying one or more imaging parameters of the imaging device after the first image is applied, and applying a second image to a second side of the media using the modified imaging parameters. In Wibbels, a print engine controller permits a variable period (beam detect delay) to elapse after the detector 46 is activated by a beam 32 before the beam begins to apply image data to the surface of an OPC drum. The change in the delay from the beam detect signal to the start of data write onto the OPC drum is expressed by the equation $\Delta_d = -(0.5) \times (\Delta_w)$, where Δ_d is the change in the delay from beam detect to start of data write, and Δ_w is the percent change in media dimension in the scan direction before and after imaging. Another timing parameter is the rate of transmission of image data for a given scan line. The rate of transmission of image data may be modified directly, by changing the frequency of the laser pulses. See column 6, line 32 to column 7, line 5.

For duplex image alignment, Wibbels determines write start timing for image formation on a second surface of a transfer material on the basis of write start timing for image formation on a first surface of the transfer material and a percent change in media dimension (i.e., an expansion/contraction ratio of the transfer material after fixing of the image on the first surface). Specifically, to determine the write start position for image formation on the second surface, the write start position for image formation on the first surface is increased or decreased by an amount equal to half the expansion/contraction ratio of the transfer material. Alternatively, Wibbels calls for changing the frequency of laser pulses in accordance with the expansion/contraction ratio of the transfer material.

Sawayama discloses correcting the position for writing an image on the photoconductive element on the basis of the sensed reflections. In Sawayama, a beam sensor 44 detects a laser beam 24 before the beam 24 starts writing an image, and a write timing setting circuit 45 delays the output of the sensor 44 for a predetermined period t and generates clock pulses synchronous to the resulting delayed signal and having a period S . On counting a predetermined number nb of clock pulses after the generation of the signal, a write timing setting circuit 45 generates a write timing signal. A black image signal is fed to a modulation drive circuit to modulate the semiconductor laser, and the laser beam 24 starts writing a black image on the drum 107. Likewise, writing a read image is started when a predetermined number nr of clock pulses is counted. The circuit 45 corrects the predetermined number nr (or

nb) by a correction signal to correct the time for generating the write timing signal for the red (or black) image. Column 14, lines 5-40.

In Sawayama, to correct the image displacement between image formations on the first and second surfaces, Sawayama changes, according to the result of detection of a deviation between a black toner image and a red toner image in the main scanning direction, a count value of image clocks in accordance which an image write timing signal is generated. In other words, Sawayama changes the write timing by changing the count value, with the frequency of the image clock maintained unchanged.

Claims 1 and 9 call for switching the frequency of the image clock between image formations on the first and second surfaces of a transfer material. Moreover, the write start timing is changed between forming images on the first and second surfaces. The second number of pulses of the image clock or the number of pulses of the second image clock for forming an image on the second surface is changed so as to be equal to $1/(1 + X/100)$ of the first number of pulses of the image clock or the number of pulses of the first image clock for forming an image on the first surface. Accordingly, even if the applied references were to be properly combinable for argument's sake, the combination would not have taught the claimed invention.

Conclusion

Applicant submits that the pending claims patentably distinguish over the applied references and are in condition for allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicant urges the examiner to contact the undersigned to expedite prosecution.

Respectfully submitted,

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05 NOVEMBER 2006

DATE

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REG. NO. 34,079 (RULE 34, WHERE APPLICABLE)

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